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AUTHOR Kruvant, Charito; And Others
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ABSTRACT

This paper presents a discussion of the impact of the physical design of day care settings on children and adults. Specifically addressed is the question of how the location and design of the facility, the arrangement of indoor and outdoor space, and the organization of the furniture and materials affect the behavior of the adults and children who use the space. Section I of the paper presents overall recommendations for the continuation of the Federal Interagency Day Care Requirements (FIDCR) as they pertain to the physical environment of day care programs. Section II presents a discussion of specific regulations included in the FIDCR. This discussion examines specific regulations pertaining to location and zoning, safety and sanitation, needs of handicapped children, square footage, indicators of quality space design, outdoor space, and equipment and materials. The discussion of each topic includes a review of current standards and recommendations for changes. Section III presents specific recommendations for improving the implementation of the FIDCR. Included are recommendations for helping caregivers meet the Federal regulations and recommendations for helping caregivers find and arrange space for their day care programs. (BD)

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Celebration in Learning '76

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FINAL REPORT

AUGUST 28, 1976

The Effects on Children of the Organization
and the Design of the Day Care Physical Environment --
Appropriateness of the Federal Inter-Agency Day Care Requirements.

PS 010005

Charito Kruvant - Project Director
Ginny Redish - Writer/Coordinator

Diane Trister Dodge
N. Jane Hurt
Richard J. Passantino
Robert Sheehan

WILLIAM PROSSER - Project Officer
Attention: Jane Gold

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1451 I. STREET, N.W.
WASHINGTON, D.C. 20005

The Effects on Children of the Organization and the Design of the
Day Care Physical Environment - Appropriateness of the Federal
Inter-Agency Day Care Requirements.

INTRODUCTION

This is the final report of the Celebration in Learning '76 team to the DHEW policy committee studying the appropriateness of the 1968 Federal Inter-Agency Day Care Requirements (FIDCR). This paper is one of a series commissioned by the Office of the Assistant Secretary for Planning and Evaluation, DHEW. (Contract Number HEW-100-76-0142).

Our part of the study is concerned with the regulations on Environmental Standards (FIDCR # 11, pp. 7-9) and Educational Standards (FIDCR # 111, pp. 9-10). The major focus of our report is the impact of the physical environment: how the location and design of the facility, the arrangement of the indoor and outdoor space and the organization of the furniture and materials affects the behavior of the people (adults and children) who use the space.

This paper has been prepared by a team of six staff members and consultants of Celebration in Learning '76, a research and demonstration project funded by the Office of Child Development in cooperation with the Washington D.C. Bicentennial Commission. The team includes educational architects and specialists in early childhood education, multi-culturalism, and staff development. The design and arrangement of space and materials in early childhood settings is the focus of the Celebration in Learning '76 project and each of the team members. The members of the group have many years of experience in designing centers (both new and renovated), in observing a wide variety of child care physical settings and in working with day care providers (directors and classroom staff) on the organization of the physical environment. Biographical sketches are given in Appendix A.

Plan of the Paper

Following the introduction the reader will find a summary of major conclusions and recommendations. In the body of the text the chapters flow according to the order of the sections of the FIDCR: that is: Location of Day Care Facilities; Safety and Sanitation; Suitability of Facilities; Educational Services. Under each of these headings, we state our recommendations regarding the regulations and then present supporting evidence and rationale. The final section includes recommendations on licensing and enforcement procedures which have to be considered if the FIDCR are going to be effectively used.

Scope and Limitations of the Study

The time frame and cost limits of the grant have meant that we could not investigate any single aspect in all its depth and ramifications. We have, however, augmented our own knowledge base by consultation with leading experts in the field, by a further search of the literature and by a critical review of all the research studies we could find.

Where the research evidence has proven to be weak or non-existent, we have indicated the need for more studies and the directions they should take. In the absence of clear research data, we report empirical evidence based on our own observations and those of others in the field. For some points it is only possible to raise the relevant questions and indicate the implications of alternative actions.

Because of our own areas of interest and expertise, some topics are discussed in greater detail than others. In particular, we do not address at all the issue of care of school-age children because the time frame and program needs are very different from full day care of younger children. The discussion of two other topics -- the special needs of infants in center care and regulating day care homes -- is less complete than we would wish.

An earlier version of this paper was read by several consultants and discussed at a conference held in Washington, D.C. on August 18, 1976. (The names of the conference participants and the people who reviewed the draft are given in Appendix B.) The Celebration in Learning '76 team wishes to thank all of these people for their time and suggestions but does not imply that they would all agree with all of the conclusions and recommendations presented here.

We also wish to acknowledge with gratitude the help of Sai Chiang and Tawara Taylor for typing and editorial assistance.

EXECUTIVE SUMMARY

The design and organization of the physical environment has a profound impact on all the factors that describe quality day care: on adult-child interactions, child-child interactions, children's physical and mental well being, children's independence and cooperation, and the development of social skills and cognitive learning. Research studies as well as observations by day care workers tell us that certain space designs are conducive to positive interactions and to smoothly functioning programs while other physical settings hinder achievement of parental and program goals.

While federal regulations cannot and should not dictate specific physical environments, there are certain principles of quality space usage that could become compliance requirements for federally funded programs. In this summary we repeat each of the major recommendations made in the paper. The discussion of supporting evidence and rationale for each of these recommendations will be found in the body of the text.

Major conclusions and recommendations:

- The federal government should continue to regulate child care in federally subsidized programs.

- The FIDCR should be bolstered by the addition of compliance requirements such as those given in the Guides for Day Care Licensing.

- As a compliance requirement for the implementation of FIDCR IIA2b that "convenience to the home or work site of parents ..." be considered in establishing day care, we suggest: "Day care be allowed in all zoning districts be they residential, commercial or industrial unless it can be shown that hazardous environmental factors are present at that location."

- In reference to the FIDCR on Safety and Sanitation, the specific requirements in the Guides for Day Care Licensing, pp. 35 - 44, on Fire and Safety Requirements should be made part of the FIDCR.

- In reference to the Interagency Requirement on handicapped children, we recommend that the following additions be made to the FIDCR: Wherever structural factors are the inhibitors of inclusion of handicapped children in a day care program, every effort should be made to eliminate these barriers. The administrative agency should be required to help the day care provider obtain technical assistance in space design and to obtain funding necessary to make space accessible to handicapped children. The administrative agency which places a handicapped child in a day care program must also be responsible for training the day care staff in the special needs of these children and provide technical

assistance in integrating these children into the ongoing program and/or adjusting the program for them. Where the space and program cannot be altered enough to allow the child to be self-sufficient (because of the child's degree and type of handicap), but the child could enter the program if there were additional staff, the administrative agency placing the child should also provide assistance in securing special funding for the extra adult help required.

- That FIDCR IIC1a "adequate indoor and outdoor space ..." be expanded by the compliance requirements on p. 19 of the Guides.

- That further research studies be conducted into the question of minimum space necessary for a given program mode; that ABT Associates analyze the correlations between space per child and other factors that they determine to be indicators of quality day care.

- Research and observational studies suggest that four primary features of quality space are:

- variety
- organization into separated areas
- provision for privacy
- provision for "soft" areas.

Specific compliance requirements to achieve these features in day care settings are recommended.

- In a program where a majority of the time is spent out of doors, the compliance requirements relating to variety of settings and activities, protected areas, private areas and soft areas, should be applicable to the outdoor facility. In programs where the outdoor area is used only for shorter periods of the day and primarily for physical exercise to supplement well organized and well supplied indoor space, the compliance standards should be recommended goals for the outdoor area.
- The important factors in regard to materials and equipment in a day care program are sufficient quantity, variety, display organization and cultural relevance. These features should be part of the FIDCR requirements concerning educational standards.
- It is necessary to be concerned with the process of implementation of the FIDCR and studies have shown that the monitoring and licensing process needs improvement.
- The intent of the regulations and the licensing process should not be to close down programs, but to aid child care givers to satisfy the requirements.

- There should be an information packet available to prospective child care providers outlining step-by-step what must be done to be licensed.
- The licensing function should be placed in an agency that is directly concerned with early childhood education.
- Early childhood specialists who become licensing monitors should be trained in applicable regulations.
- The licensing monitor should give technical assistance in how to meet space requirements when requested to do so.
- There should be a coordinating board to eliminate contradictory regulations.
- Performance standards should be flexible with stated alternatives whenever possible.
- Levels of acceptable compliance could be built into regulations.
- Planning grants and assurance of continuation of support for well functioning programs would facilitate long range planning which is necessary to amortize the initial costs of setting up the physical facility.

- Licensing authorities should be mandated to maintain lists of technical experts available to help day care providers including experts in space design.
- The use of physical space should be included in the list of specific program areas to be included in inservice training (FIDCR VI).
- FIDCR requirements for training should be continued and emphasized because enabling the child care worker to make educated decisions about the use of physical space is probably the most efficient and practical way to achieve the goal of quality space usage in child care programs.

I. Overall Recommendations

A. The federal government should continue to regulate child care in federally subsidized programs.

Rationale:

1. The federal regulations set minimum standards to protect the health and safety of young children. While some state and local codes go beyond these standards, others do not. (see Day Care Licensing Study, 1971; Day Care Licensing Policies and Practices, 1975.) In 1971, in eleven states, licensing of family day care homes was not mandatory. (DCLS, p.4) "In a few states requiring licenses, there are large gaps in coverage when licensing is not mandatory for all cities and counties." (ibid.) Without federal regulations some children even in center care would be in unmonitored settings.

2. There is no uniformity in state codes. Several compilation studies have been done in the last several years. Two of them which we have seen are the Day Care Licensing Study, OCD 73-1066, Phase I, August, 1971 and Day Care Licensing Policies and Practices, Wendell H. Pierce, Denver, Colorado, July, 1975. One major conclusion of both studies is that "there is a dramatic lack of uniformity among states and within states on almost any aspect of the day care licensing process" (Day Care Licensing Study, p. 9.) Although compilations have made comparison charts on some aspects of state regulations, there has been no attempt (that we know of) to examine all the local codes and the correlations of state codes is necessary incomplete.

3. All this would be inconsequential if day care was always available in settings that easily met all requirements. As Gwen Morgan points out that is not the case. "The hard fact," she writes, "is that we have very large numbers of programs in this country which are of very poor quality." (Morgan, 1972, p.43, see also Keyserling, 1972.) Standards are needed to protect our children. The existence of federal requirements sends a strong message that the government cares about the children in child care settings.

4. The federal government has the right and obligation to set standards of accountability for funds it supplies. The argument has been made that the government shies away from regulating public schools although it gives funds to local school systems. The difference is, however, that federal monetary input into public schools nowhere amounts to more than seven per cent (7%) of the system's budget whereas under title XX the federal government pays seventy-five per cent (75%) of the day care costs for children who are covered by this provision of the Social Security Act. (ABT Associates, 1975, p.iv.)

5. Regulations can be a force for positive change in facilities and programs. When FIDCR first became mandatory in the state of Mississippi, some centers particularly serving poor and rural Black children were immensely improved. (David Rice, personal communication.) Mississippi is one state that had no state regulations until 1972, after the FIDCR made it necessary to have such standards.

6. Only the federal government has the overall view necessary to promulgate regulations promoting cultural sensitivity. The diverse community groups across the country need this support from the national government. States are often dominated by one cultural point of view.

7. In many cases at the local level the statistics on the effects of not having health and safety standards simply do not appear very compelling. It is the overall, national picture which is needed.

8. The FIDCR have continually received the support of Congress (in 1971 and 1972, in 1973 by a Senate vote of 67-20). The representatives of the people believe the federal government should regulate federally funded day care.

B. The FIDCR should be bolstered by the addition of compliance requirements such as those given in the Guides for Day Care Licensing.

Rationale:

The FIDCR as they are currently written are very vague and ambiguous. For example, they call for "adequate . . . space"; for "ventilation and temperature adequate for each child's safety and comfort"; but they do not include any operational definitions of what is "adequate" in these categories. To monitor a day care setting it is necessary to also have a set of licensing standards, be they federal, state or local. Referring to the arguments under Recommendation I above, there is justification for the federal government to be more specific

in stating what it considers to be an acceptable standard for certain of the interagency requirements. Our recommendations for compliance requirements are based on the knowledge and expertise of architects, designers, and child development specialists as explained in the rationale given for each specific section below.

II. Discussion of Specific Sections of the FIDCR

1. ZONING

Reference: FIDCR pp. 7-8

II. Environmental Standards

A. Location of Day Care Facilities

Recommendation: As a compliance requirement for the implementation of 11A2b that "convenience to the home or work site of parents . . ." be considered in establishing day care, we suggest: "Day care be allowed in all zoning districts be they residential, commercial or industrial unless it can be shown that hazardous environmental factors are present at that location."

Comments: Zoning laws often prevent centers from being established in locations that would satisfy the requirement of convenience for parents. Zoning laws are harsh to day care. As Gwen Morgan has written "Zoning tends to, and apparently intends to inhibit the service rather than facilitate it." (Morgan, 1972, p.10). In their national survey Windows on Day Care, members of the National Council of Jewish Women found that "In some localities it was reported that zoning regulations imposed insuperable barriers." (Keyserling, 1972, p.118).

For zoning purposes, child care programs should be treated as a community facility and not as proprietary use. (See Guides for Day Care Licensing, p.56; also Zoning for Day Care.) In other countries (particularly Great Britain, Austria, and Sweden), day care centers are planned as integral parts of residential communities and also commercial and industrial areas. (See for example, Current Sweden, Sept. 1974). Day care housed in or near public schools might be

convenient for parents who have other children in older grades. High school students could supplement or augment the day care staff. (We thank May Aaronson, NIMH, for bringing this point to our attention.) We realize that the original intent of many zoning restrictions was the protection of children, but it is now time to rethink whether or not current zoning laws are in the best interests of families in need of day care.

It is a well known fact that the majority of children under six receiving care are in home rather than in center settings. (Zamoff and Lyle, 1973; National Child Care Consumer Study, 1976). Among the reasons why parents make this choice are the inconvenience of available center care in terms of travel time and the lack of available care either within the family's own neighborhood or near where the parents work. In the seven months that Celebration in Learning '76's storefront classroom has been open, we have received hundreds of requests from parents who work in the vicinity and who desire child care near their employment.

Day care is usually excluded from business districts, but centers near the parent's place of employment would have several advantages:

- only one commute to work and child care;
- parents could visit their children during the day;
- parents could have time to become involved in the center (for example, during lunch hours),

Although we realize that attitudes are also involved in exclusion of

day care from business areas, if zoning restrictions were lifted and some child care facilities were available, these might in themselves lead to attitudinal changes.

2. SAFETY AND SANITATION

Reference: FIDCR p.8

II. Environmental Standards

B. Safety and Sanitation

Recommendation: The specific requirements in the Guides for Day Care Licensing, pp. 35-44, on Fire and Safety Requirements should be made part of the FIDCR.

Discussion: No center should be licensed if it fails to meet health and safety requirements. All children must have the same degree of protection from injury and illness that can occur in unsafe, unhealthy environments.

At the present time, the FIDCR themselves require only that facilities meet the requirements of "appropriate authorities." Thus compliance standards are left to local licensing groups. Dr. Irwin Benjamin of the National Bureau of Standards informs us that, except for large cities, many localities do not have building codes. In only a few states is there a mandated statewide building code. Furthermore, building codes seldom deal with the specific needs of day care children.

The section on fire safety requirements of the Guides for Day Care Licensing is based on the work of many experts who specifically considered the day care situation. These are similar to the specific requirements for day care (including home care) which have been written into the Life Safety Code of the National Fire Protection Association.

We recognize that the risk in too rigid regulations is the difficulty some communities may have in finding suitable facilities within the neighborhood. The problem is that stringent standards may inhibit the availability of care. In the opening paragraph of the relevant section of the Guides for Day Care Licensing (p.35), there is provision for the flexibility necessary to accomodate regional differences in architectural design and provision for waivers where they can be shown not to adversely affect safety.

We understand that another appropriateness study (that of Aronson and Pizzo) is concentrating on weighing the balance of risk of injury and accident to children in day care at various levels of safety requirements with what might happen to the same children if day care were unavailable.

It must be emphasized that safe and healthy day care is not an isolated issue. The lack of suitable sites for day care that can meet safety and sanitation standards in a given community may reflect the general condition of housing in that area. This aspect of the

day care space problem is part of the urban housing crisis and must be treated as such.

While many of the groups affected by this problem are ethnic minorities, safe space is not a question of culturally appropriate space. We discuss the issue of culture and square footage in a different section. There should be no contradiction between cultural relevancy and safety standards.

In considering the adoption of the standards as recommended here, it is important to remember that the safety regulations in the Life Safety Code and in the Guides were developed based on mandated staff ratios. If the staff ratios are changed, the safety regulations would have to be reconsidered.

In considering waivers for safety standards or in later revisions of specific standards, the question could be raised whether or not Americans overprotect their children. Safety standards in the United States are more stringent than in European countries such as Sweden (Passantino, 1971); but statistics in Sweden show a higher incidence of injury at home than in day care. If research studies as reported by Aronson and Pizzo find that for example cooking as an activity in day care centers does not result in injuries, then we would agree with a recommendation to allow such activities because they would foster our generally recommended goal of making day care more home like.

3. HANDICAPPED CHILDREN:

Reference: FIDCR p.9

II. Environmental Standards

C. Suitability of Facilities

Interagency Requirement: "There must be provisions for meeting the particular needs of those handicapped children enrolled in the program."

Recommendation: That the following additions be made to the FIDCR: Wherever structural factors are the inhibitors of inclusion of handicapped children in a day care program, every effort should be made to eliminate these barriers. The administrative agency should be required to help the day care provider obtain technical assistance in space design and to obtain funding necessary to make space accessible to handicapped children. The administrative agency which places a handicapped child in a day care program must also be responsible for training the day care staff in the special needs of these children and provide technical assistance in integrating these children into the on-going program and/or adjusting the program for them. Where the space and program cannot be altered enough to allow the child to be self-sufficient (because of the child's degree and type of handicap), but the child could enter the program if there were additional staff, the administrative agency placing the child should also provide assistance in securing special funding for the extra adult help required.

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Comments: In a discussion of handicapped children it is necessary to distinguish different types of handicaps and varying degrees of severity. General categories are 1) physically impaired, 2) emotionally disturbed and 3) mentally retarded. Degree of handicap varies in a continuum from "minimal" to "severe and profound". ("Handicapped Persons" p.24ff)

There are educational, social and financial benefits to be reaped from the inclusion of handicapped children in regular day care programs, if the degree of handicap is such that the special child can function alongside the normal child. Some program adjustment may be necessary, but obviously we stop short of advocating the mainstreaming of children whose behavior would cause severe disruption of the program or the risk of physical harm to themselves and others.

Further there is some evidence that severely emotionally disturbed children react differently to space than do normal children. In Hutt and Vaizey's study (1966, p.1372), autistic children in the large group withdrew so completely to the boundary of the space that they turned themselves to the wall. These children may require a physical environment that is distinctively different from the one we would design for normal children. (See also Bayes, 1967, on the different perceptions of emotionally disturbed children.)

Structural design issues relate primarily to meeting the needs of physically handicapped children. There are a variety of items to

be considered (ramp access, width of doors and corridors, height of sinks, etc.), but for new construction the cost variable is minor. A low sink costs no more to purchase and install than a high sink. The critical factor is that appropriate structural features must be included from the initial planning stages. If the blueprints are drawn without providing for the physically handicapped, then it will increase construction costs to add to or revise what has already been done.

One difficulty that still exists in planning day care settings for physically handicapped children is that there are as of yet no design specifications meeting the needs of children in wheelchairs. Children in wheelchairs are not the same height as adults in wheelchairs just as normal children are not at the same height as normal adults. Building codes such as the ASA Specifications for "Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped" have no standards dealing with the special needs of children. The illustrated book by Ronald Mace cited in the bibliography could be used as the prototype for a similar manual for architects designing space for the use of handicapped children.

For renovations, the cost factor may be somewhat higher, especially where the space includes stairways. This one time construction cost, however, is certainly much less than the continual expense of keeping these children in special education programs which are immensely costly. (See the Federal Register publication "Handicapped Persons" May 17, 1976, for figures on estimated monetary savings of including handicapped children in regular programs.)

Two additional points that should be considered are: While there is a growing movement for the states to mandate education for handicapped children, in many states these programs do not cover children under the age of 5 or 6. It is estimated that only twenty-two per cent (22%) of handicapped children in the U.S. under the age of 5 are now being served in any way. ("Handicapped Persons", 1976, table 7, p.33). Yet the need is great. The earlier a start these children get in their education and living skills, the greater the chance there is for them to become functioning and productive adults. For their parents, child care is needed to provide relief from the continual care these children require. We should have day care space available for these families.

On the other hand, there is a potential danger in requiring mainstreaming of children before the facilities and staff are available to handle their needs. This danger is twofold: For truly handicapped children there is the possibility that their needs will be met less adequately in unprepared space than in special programs. For normal or borderline children, who may be labelled as handicapped so a program can meet its quota, there is the problem that such mislabeling will have negative consequences that follow the children throughout their school career. For these reasons, we urge the adoption of regulations that will result in the availability of day care with appropriate physical space for handicapped children.

4. SQUARE FOOTAGE

Reference: FIDCR p.9

II. Environmental Standards

C. Suitability of Facilities

Recommendation: That IICla "adequate indoor and outdoor space . . ." be expanded by the compliance requirements on p.19 of the Guides for Day Care Licensing:

- a. There is at least 35 square feet of indoor space per child available for the care of children (i.e., exclusive of bathrooms, halls, kitchen and storage places) or
- b. Limited indoor space is offset by outdoor space where shelter and climate permit reliable use of such space for activities normally conducted indoors.
- c. There is at least 75 feet per child of outdoor play space. Where such space is not available at the facility, parks or other outdoor facilities that are easily accessible may be utilized.

Recommendation: That further research studies be conducted into the question of minimum space necessary for a given program mode; that ABT Associates analyze the correlations between space per child and other factors that they determine to be indicators of quality day care.

Discussion of Indoor Footage Requirements: The figure of 35 square feet per child seems to derive from historical precedent rather than from any research base. Forty states require that amount while six have a 30 square foot minimum. Two states (Florida and Vermont) allow centers with 25 square feet of indoor space per child. In Maine and Virginia a center can be licensed with only 20 square feet per child. (Day Care Licensing Study, pp. 22-23)

The architects on the CIL team feel that 35 square feet is a logical minimum in a situation where the children are going to move around and engage in activities. The risk in not setting a specific figure would be that centers in some states could keep children in far smaller space. We do not know for certain what the effects of that would be.

Some research data on the effect of space size on young children does exist. Although the parameters of the studies are not directly relevant to the present situation, we review them here because the findings are suggestive. After Calhoun (1962) found that crowding into a small space produced aberrant behaviors in rats, researchers began to question the effect that high density would have on humans. We have found three studies that investigated group density and social behavior in young children. In every case the change in space available per child produced significant differences in behavior.

Working with a constant room size (472.5 sq. ft.), Hutt and Vaizey (1966) varied the number of children in the playgroup at three levels (N=6, N=7-11, N=12). Because they were in a hospital setting, each group consisted of normal, brain-damaged and autistic children. Their findings on the handicapped children have been reviewed in an earlier section. The normal children showed progressively and significantly less social interaction with increasing group size and more aggressive/destructive behavior. Hutt and Vaizey conclude (p.1371), "despite the greater opportunity for

social interaction with the larger groups, the normal subjects in fact showed less." This result was obtained in a study where the space per child never even got as low as 35 square feet. The three conditions were equivalent to 78.75 sq. ft.; an average of 52.5 sq. ft.; and 39.4 sq. ft. per child.

In the second study, (McGrew 1970), both space size and group size were varied. The setting was a university nursery school with a traditional arrangement and routine (free choice of areas such as House Corner, Blocks, etc.). The group sizes were 8-10 and 16-20. The room sizes were 778 square feet and 662 square feet. Thus the per child area varied from 39 sq. ft. to 89 sq. ft. McGrew did find differences in behavior at each density level but again all of her conditions are too optimal for our question which is whether much less than 35 square feet is a tolerable condition.

The space used by Loo (1972) in her study is more relevant to our concern. She brought groups of six children who knew each other into a low density room (=44.2 sq. ft./person) and a high density room (=15 sq. ft./person). She found that there were significantly fewer interactions and significantly fewer aggressions in the high density condition. In the denser situation, the children apparently isolated themselves. The researcher concludes that a "spatially crowded condition seems to create physical and psychological restraints on children as demonstrated by fewer social behaviors."

(379)

There was more solitary play and less group play in the denser space. Loo says, "Playing in solitude may be the child's way of increasing psychological distance from others when physical distance is limited." (379) Thus space much smaller than the 35 square feet minimum seems to discourage development of socialization skills.

Loo's findings on aggression however differ from that of Hutt and Vaizey. Loo suggests two reasons for this; first that in her study aggressive behaviors in the larger space were associated with certain materials which were largely ignored in the smaller space. Secondly, she suggests that there is a difference in that she varied spatial density (group size constant but room size differs) while Hutt and Vaizey varied social density (where the area is constant and the group size changes). In the latter case the original group may have seen the newcomers who caused the space to become crowded as intruders and reacted aggressively towards them. But we should also remember that Hutt and Vaizey's most crowded condition was more than twice as large per child as was Loo's (39.4 sq. ft. compared to 15 sq. ft.).

This in itself may be an important factor. Aggression may increase as space gets crowded up to a certain point. But there may be a threshold below which all social behaviors decrease. This point remains to be studied. None of this research was done in day care. McGrew's study was in Scotland; Hutt and Vaizey's in a hospital; Loo brought school children to a laboratory set-up. It will be possible with the data being collected by ABT Associates to investigate the relationship between square footage per child, other

features of day care programs, and children's behaviors. Such analyses should be done to see if 35 square feet is in fact a necessary minimum.

Risk in Insisting on 35 Square Feet: The risk in insisting on 35 square feet is that in some communities such space is difficult to find and care that could otherwise be made available might be denied to some children. In the Day Care Licensing Study, the most cited reasons for not being able to meet requirements were problems relating to physical structure (23.3%, DCLS, table 15, p. 45). This category is unfortunately not broken down further so we do not know if the problems were soundness of the structure or size of the space.

There is also evidence in the growing field of proxemics that the amount of personal space required to make an individual feel comfortable varies from one culture to another (Hall, 1959, 1966, Goffman, 1971). There are reports that day care is adequately provided in other countries in far less than the 35 square feet of our recommended requirement. (Marquet, et. al, 1971) Kritchevsky and Prescott (1969, p. 35) found centers where they judged the space to be very cramped but the children to be functioning very well. The two cases they cite served Mexican-American and Jewish children respectively.

The interface of culture and space needs is an area that is still being explored and further research should be encouraged. In the case of day care, however, we must not forget that a primary consid-

eration in our space requirements must be the program and activities we want to take place. Architects tell us that with 10 square feet per person you can only have a permanently fixed seat arrangement as in a movie theater or auditorium. In a day care center there has to be enough room for the children to play; there has to be room for flexibility of arrangements for different types of activities (lunch, naptime, interest centers). Until and unless further research shows that a smaller figure is feasible, we recommend the 35 square feet common to the majority of state codes with the provisions that large outdoor space may offset smaller indoor space in appropriate climates and that waivers may be given where a program can be shown to be operating effectively in smaller space. ("Effectively" in this context could be defined in a set of behaviors which monitors would be expected to notice in the center. Relevant behaviors would include: children move freely from one activity to another; children are busily involved in play or activities; children have room to do their activity without interfering with other children or other activities, etc.)

5. INDICATORS OF QUALITY SPACE DESIGN

Reference: FIDCR p.9

II. Environmental Standards

C. Suitability of Facilities

Recommendation: The requirements for suitability of facilities be expanded to include the following features as compliance requirements:

- a variety of indoor and outdoor settings and activities are available
- protected areas free of traffic by children and adults, where equipment and materials can be used with minimal interference or interruption
- private areas and spaces for children and teachers
- soft, quiet areas (such as rugs and pillows and couches) to give children a relief from the tensions of group life
- furniture that is durable and safe, and is child size or appropriately adapted for children's use
- adequate provisions for handicapped children to ensure their safety and comfort.

Discussion: The design and organization of the physical environment within a day care facility has profound effects on the interactional behavior of the people who use that space. Research and observational studies suggest that four primary features of quality space are:

- variety
- organization into separated areas
- provision for privacy
- provision for "soft" areas.

a. Space Design Affects Behavior; School Design Affects Behavior.

We intuitively know that the physical environment affects our behavior but we do not often think about it. "Although the participant remains largely unaware of his surroundings. . . these surroundings continue to exert considerable influence on his behavior."

(Proshansky, Ittelson, and Rivlin, 1970, p.37).

Architects know that space can encourage or discourage certain behaviors. For example, if you want people to move quickly along a corridor, the architect will make the hallway straight with an easily cleaned surface and unobtrusive straight-line graphics or plain walls. A corridor that is not a straight direct route, that has texture on the walls and display windows, spotlights or non-linear graphics tends to make people stop and browse. If that is the behavior that you want to foster, you can design the space to suit that purpose.

Or imagine entering a small room with a low ceiling. The walls are wood paneled or painted in muted tones of beige. There is subdued lighting, soft carpeting, bookcases along the wall, and individual lamps by overstuffed chairs facing windows that look out over grass and trees. Even a description of the room gives a feeling for the atmosphere: a mood of quiet, individual activity. The design of the space, the colors, textures, lighting and furniture all combine to give the people who enter that physical environment a very clear message as to the behavior expected of them there.

Although we seldom think about it, the physical environment is also a crucial factor in behavior displayed in educational settings. Robert Stebbins writes, "Schools and schoolrooms are among other things, physical contexts which like other physical contexts communicate messages from their makers to their users." (Stebbins, 1973). If you come into a room with the chairs lined up in rows, and a podium at the front, you would expect to sit quietly and listen to a lecture. If the same chairs in the same room are set out in a circle without the podium, you would probably anticipate a discussion and assume that you will be expected to be an active participant.

In the traditional classroom, "straight rows (told) the students to look ahead and ignore everyone except the teacher." (Sommer, 1969, p. 99). The reason for redesigning the classroom into open spaces and learning centers was to restructure students' and teachers' behaviors.

The changes in classroom architecture in the last hundred years reflect changes in educational theory - - and in the behavior expected from adults and children. (Getzels, 1974, passim.)

b. How Space Affects Young Children.

While space affects the behavior of all people, children are even more sensitive to the environment than grown-ups are. Holt says that "we all respond to space, but most adults so seldom see a space that they want to and can respond to that we lose much of this sense.

Our surroundings are often so ugly that to protect ourselves we shut them out. Children, on the whole, have not learned to do this."

(Molt, 1974, 41, see also Passantino, 1972, 5)

The influence of the environment is extremely important in child care settings, not only because " . . . a child reacts and responds to his environment far more energetically and immediately than does an adult," (Haase, p.13), but because of the importance of the early years for a child's growth and development. Young children of preschool age are busy trying to make sense of their world and the physical environment can help or hinder them in this task. When the space in a center or day care home is arranged so that areas within it are clearly defined and purposefully organized, children will respond with appropriate behavior. If the design of the child care setting is confusing or if the message the space gives conflicts with the message the teacher or home care mother gives, the children will be confused. For example, a large, open room with a high ceiling and a tile floor says "RUN" to the small child. Teacher-made rules that running is not allowed will be hard to enforce because the child is torn between the conflicting messages of the space and the adult.

The fact that the environment affects learning is particularly critical for young children because "considerable evidence indicates that the early years represent the most crucial period for perceptual and intellectual development." (Deutsch et al., p.2) According to

Dr. J. McV. Hunt, not only the ability to learn grows out of the child's experiences in the early years, but curiosity, the desire to learn, to explore and experiment are set before the age of 6.

(Loeffler, p.13.)

The impact of physical space is even more profound on disadvantaged children.

The elements of the classroom environment and their arrangement can determine how the children spend much of their time. The value to the child of the time spent in the classroom is strongly related to the arrangement of the classroom. Although the need for order and beauty in educational buildings has often been stressed, their relationship to learning is too rarely mentioned. In nursery and kindergarten school rooms for disadvantaged children, order and beauty are definitely related to learning. (Deutsch et al., p.3.)

Perception of beauty or ugliness of the surroundings has even been shown to be a factor in psychology experiments. In a study by Mintz and his colleagues, both experimenters and subjects reacted to aesthetically displeasing environments with avoidance and feelings of monotony, headache, irritability, etc. (Maslow and Mintz, 1956; Mintz, 1956).

c. What Specifics Do We Know About How Space Affects People?

What are the characteristics of the physical environment that facilitate the child's development and learning, and make a center or day care home a pleasant place where adults and children can function well together? We do not pretend to know all of the answers to this

question, but the available research studies and our observations of child care centers and homes yield some clues towards a definition of "quality space".

1. Variety: Child development experts today accept Jean Piaget's view that the need to cope with a changing environment is the basis for the development of intelligence. (Piaget, 1963, 19.) When the environment is devoid of variety it doesn't present opportunities to cope with change and development can be delayed. This was shown clearly in the study by Dennis and Najarian of children in an orphanage. With only bare white walls to look at, no variety and no stimulation in the physical environment, these children were substantially behind their peer group even in motoric development. (Dennis and Najarian, 1957, Dennis, 1960, Hunt, 1961.)

These orphanage studies are not cases of "institutionalism" irrelevant to child care situations. Reading the National Council of Jewish Women's Study, Windows on Day Care, one realizes that, all too often, barren, stultifying day care does exist. Even eliminating those cases which we would all agree are horror studies, (custodial care that amounts to imprisonment of children) and looking instead at child care settings that are considered educational; we still often find very little variety within the physical environment. Young children both in center care and in day care homes are often in one very large room with a high ceiling, uniform fluorescent lighting and monochrome walls.

The aimless wandering so often observed by CIL professionals in day care centers and reported to us by day care staff may be the child's search for a space that meets his interactional mood of that moment - a search that is often fruitless because the choice does not exist.

A home setting (when the children are allowed in the different rooms of the house) usually naturally provides variety in size of space and atmosphere as determined by color, light and texture. A day care center or a home which utilizes only one room can still create a "home away from home" environment.

A large space can be subdivided into different activity areas of varying size by the arrangement of the furniture. Variety can also be achieved by changing the level of the space, by making platforms or lofts, or using cushions to make a space that seems lower than the rest of the room.

While all people benefit from being able to choose different spaces at different times, A VARIETY OF PHYSICAL SETTINGS IS MORE CRITICAL IN DAY CARE THAN IN TRADITIONAL NURSERY SCHOOLS BECAUSE PEOPLE ARE IN THE SAME SPACE FOR A MUCH LONGER TIME.

The Need for Variety in Color and Lighting:

Lighting: Day care codes for local licensing specify intensity levels, often call for fluorescent lighting and certain types of switches and wiring so that it becomes difficult to have both fluorescent and incandescent lighting in the same room. Yet having both would add immeasurably to the flexibility of the space.

For example, one would want to have high intensity lighting in the art and manipulative areas, but lighting that can be dimmed in nap areas. A low hanging individual bright lamp is an excellent way to make a reading corner a distinct place. Again one has only to think of one's home setting to appreciate how changing the intensity and type of lighting can define and differentiate specific activity areas. One has only to look at centers to see how seldom variety in lighting is used. In day care homes where the children spend large amounts of time in one room (e.g. the basement) these same comments apply.

There is some research evidence that fluorescent lighting may have harmful effects on certain people. Standard cool white fluorescent light emits x-rays and radio waves as background radiation. It also lacks ultraviolet waves, but has other color waves that peak in the green and yellow region. It is known that green and greenish light is fatiguing and uncomfortable to the eye. (Harmon, 1944, p.49.)

Fluorescent lights have been implicated as a possible cause of hyperactivity in children. The original experiment was conducted by John Ott in four windowless first grades in Sarasota, Florida. There were hyperactive students in each class. In two rooms the fluorescent lights were shielded against x-rays and radio waves and were altered to include ultraviolet waves. In the two control classes no changes were made. "According to their teachers, the hyperactive youngsters did improve their behavior and learning under the new lighting." The controls did not improve. (Arehart-Treichel, 1975, p.18.)

The hyperactivity study was replicated in Santa Cruz, California in 1973-1974. When children were moved from fluorescent-lit rooms to rooms with incandescent lights, symptoms of headache and nausea disappeared and behavior improved. (Ibid. p.22)

In earlier studies, mostly in factory situations, fluorescent lights were implicated as causes of eye fatigue, headaches, oculo-motor incoordination and vitamin deficiencies. The lights in use at that time were found to destroy riboflavin (vitamin B2) and vitamin A. (Harmon, 1944, p.496.) Are present day fluorescent lights different? Further literature search and probably further study are needed to determine all the effects that fluorescent lights have on the human body. In the meantime we cannot make definitive recommendations for lighting in day care centers.

Color: Light and color are interdependent aspects of space design. Different types of light emit different color wavelengths. Specific colors of light have been shown to have profound effects on animals and plants. (Arehart-Treichel, pp.18-20) Their impact on humans is less well understood. Perception of paint color is also affected by the light in which it is viewed.

Interior designers know that color gives very specific messages. Some colors are perceived as warm (especially reds), others as cool (especially blues). Warm colors tend to be moderately exciting; cool colors tend to be relaxing. (Birren, 1969, p.399, Bayes pp. 31-32)

There are physical differences in nerve reactions to the wave lengths of different colors. In fact it has been shown that color actually causes physiological changes in the human body as measured by blood pressure, respiration, etc. (Bayes, p. 28ff; Birren, p. 440)

Vibrant, intense color as the background on walls or floors, can cause children to have difficulty in perceiving an object they are supposed to be studying. For this reason, color specialists suggest that the background walls in areas where children are attending to cognitive tasks should be neutral and unobtrusive; but bright colors can be very effective in other areas such as corridors, bathrooms, vestibules.

We believe that few lay people, including child care workers, are familiar with this technical information. They, like the children, react subconsciously but unknowingly to the depressing sameness of their physical environment; or they try to offset the dullness of their surroundings by painting the entire room in bright colors with the result that there is no restful place for the child (or the adult).

We recommend that a collation and summary be made of the present state of professional knowledge about the impact of color and light on the human body and that such information together with implications and suggestions for day care settings be distilled into a booklet that could be read and understood by the day care provider.

2. Organization: After the provision for variety, the second crucial component of quality space in a day care setting is how it is arranged to provide for the program activities. "The organization of space in a room structures a program by defining the child's and adult's use of the room." (Werlin, 1969, p.2)

As Dwayne Gardner has written:

The primary ingredient for a quality learning environment is space. . . . The organization of the space, the placement within of centers of interest, dictates the flow of the learning activities. A well organized and efficient space reduces confusion, disorder and discipline problems. (Gardner, 1968, p.5.)

We do not wish to require any specific arrangement of a day care setting. We want to foster quality day care without imposing any particular curriculum or program. We recognize that the United States because of its size, regional and cultural differences and strong federalist tradition will not impose uniform national program standards as are found in many European countries. It is not only political reality to recognize that this is not feasible, but also we agree with the general public sentiment that the federal government should not set national curriculum; that communities differ and should be able to reflect their differences in their programs. THE QUESTION BECOMES HOW TO ENCOURAGE QUALITY WHILE REMAINING FLEXIBLE.

Many of the problems that trouble child care workers, e.g. aggressive or withdrawn behavior, constant and aimless running in a room, children unable to stick with a task, a high noise level; can be alleviated by rearranging the furniture within the space to create separate, distinct and enclosed learning areas. This applies to day care centers and to home care settings.

Discussing the causes of low quality ratings that some open structure centers received in their study, Prescott and her co-workers found that "What open centers most often lack is enough for children to do and careful organization of the space so that children can find what there is to do and pursue it without interruption." (Prescott, 1975, p.65)

When all the areas of the room are visible to each other, it is difficult for young children to work/play without being distracted. The inability of many day care children to attend to a task for more than a few minutes at a time may be related to the fact that totally open space is very distracting. Bayes reports that "many psychiatrists have reached the conclusion that large rooms encourage anti-social behavior in the disturbed person." (p.20) Even normal children, he agrees, can feel lost in a big room.

In an experiment in creating open and enclosed areas within the outdoor space, Moore found that "the greatest amount of creative activity in terms of both frequency and span took place behind the play house. It is suggested that one of the reason for this was the sense of enclosure there." (Moore, 1966, p.107.)

In our observations, we have found that well organized space benefits both the children and the adults. If the messages of the space are clear - "This is the block area." "This is the space for looking at books." - then the world of the day care setting makes sense to the young child. Prescott et al. found a large degree of ambiguity in totally open centers. The need to avoid ambiguity is stressed for disturbed and retarded children (Bayes, p.15.), for deprived children (Mattick, 19 a and 19 b.) and for very young children. (Trister, 67 1976.)

When the space is organized so that the children can function independently, we are building their sense of self worth and confidence in their own ability. When activity areas are enclosed, young children feel more secure. For some shy and withdrawn children the large open space of many centers or homes with so much to see and do may simply be so overwhelming that they can choose nothing.

High noise levels may be fatiguing to children and staff. Day and Sheehan comment on how noise permeates the room in a totally open setting. They find that "this sound intensifies frenetic activity and possibly contributes to a high degree of aggression." By grouping noisy areas in one section of the room, children can choose when to participate in loud or quiet activities.

Other researchers such as Richard Fiene have also found that organizing physical space into activity areas may be one important feature

of quality day care. In a study with toddlers aged twelve to eighteen months in a day care center, Fiene found that when more children were introduced into an ongoing situation, if there were activity areas, adult-child interaction was not affected; but if there were no activity areas, interactions were greatly affected. (Fiene, 1975, p.59.)

Space organization also benefits the adults. Less time spent in housekeeping chores releases the teacher or home care mother to spend more time in positive interactions with the children. As Haase points out "Even the most experienced and inspired person has limited energy and time. The physical shape of things, carefully selected and arranged, can significantly ease the task." (Haase, p.6) FULL DAY CARE OF YOUNG CHILDREN IS IN ANY CASE AN EXHAUSTING JOB. ORGANIZING THE PHYSICAL ENVIRONMENT CAN BE A MAJOR TOOL IN FREEING THE ADULTS TO BE TEACHER-FACILITATORS.

3. Privacy: One specific need of children that is not met in many day care settings is for privacy - a place where a child can go just because he/she needs to be away from the activity and the group. FIDCR now mandates a place in which to isolate the physically ill child. The rationale is undoubtedly to protect the physical health of that child and the other children.

WE SHOULD ALSO BE CONCERNED WITH THE CHILDREN'S MENTAL HEALTH. Observations in child care settings reveal many instances where children flit from one activity to the next, making only brief social encounters. It may be that the day is so full of people and activities that that particular child simply cannot copewith it all.

Children who are acting out and being destructive may be sending a message that they really need the time and space to be alone for a while. When the child care space does not provide for secluded "time out" spaces, children may invent them. They crawl under tables or climb onto high shelves. This is often seen as "bizarre" behavior when in fact it is a very normal reaction to the stress that group interaction creates for some children at some times.

In a descriptive study of fourteen pre-schools, Sheehan and Day (1975) found that differences in children's behavior such as attending to tasks, initiating conversation, being considerate to other children, etc. correlated with differences in the organization of classroom space. Two critical indicators of space usage that were associated with a high level of positive interactions were separation and

enclosure of activity areas and provision for privacy. Taylor and Vlaistos (1975 p.15) report "We found a deep desire for personal space among children who were questioned about their classroom preferences."

Children should be able to, at their own volition, escape from the activity of the rest of the group. They should be allowed time to recharge their batteries, collect their thoughts, or catch their breath. The Head Start booklet, "Designing the Child Development Center" agrees that "the space. . . should also contain private places for one child alone. A child who needs to be comforted, . . . or who simply wants to be by himself, needs the comfort of a secluded and protective space." (Haase, p.13.) In many centers, however, privacy is never an option for a child.

In fact, privacy is a need of all people. In many centers even the teachers have no separate place where they can leave their belongings or where they can go to be away from the group. Public schools now provide private space for teachers but many day care centers do not. The well being of the staff is a major concern for any program because it has direct effects on interactional patterns. EVERY CHILD CARE SETTING SHOULD INCLUDE A PLACE FOR THE PRIVACY OF BOTH CHILDREN AND ADULTS.

A private space does not have to be elaborate or expensive. It does not have to be a separate room. Cardboard boxes, lofts, curtained partitions - - there are many ways to create space that is self limiting to one child (or two). In day care homes, there should also be provision for a place for one child to be alone.

4. Softness: In the most significant day care study to include space usage as a variable, the Pacific Oaks group found that, "space quality clearly predicted differences in teacher behavior and children's responses. High quality space was associated with sensitive and friendly teachers, interested, involved children ... Low quality space tended to have neutral and insensitive teachers and children who were less involved and less interested. . ."

(Kritchevsky, 1972, p.39.)

One factor in particular which they found to be significant was what they called the "Softness Rating" based on the presence or absence of eleven components:

1. play dough
2. sand which children can be in, either a box or area
3. "laps", teachers holding children
4. single sling swings
5. grass which children can be on
6. large rug or full carpeting indoors
7. water as an activity
8. very messy materials such as finger paint, clay, mud
9. child/adult cozy furniture: rockers, couches, lawn swings
10. dirt to dig in
11. animals which can be held

(Prescott, 1975, p.19)

"Softness", therefore refers to soft flooring (grass, rugs, pillows), places to curl up and be cozy (couches, rocking chairs, swings), opportunities to cuddle or be cuddled (animals to hold, adults' laps) materials that feel soft to the touch and are calming to work with (sand, dirt, mud, water, finger paint).

Taylor and Vlaistos also report (p.34) that "after reconstructing areas of the classroom with soft fabric, carpeting and pillows, we noticed that when children entered the area, their behavior immediately changed from active to more subdued." Griffin et al. report on two other studies where similar behavioral changes resulted from replacing the flooring with carpeting in hospital settings. (Griffin et al, 1969, p.96)

ABT Associates is using the Prescott protocol in their current day care study. Therefore they will be able to use the "softness ratings" as a variable. Unfortunately the analysis of the ABT data is not yet complete. It will be very interesting to see if the "softness rating" does indeed prove to be a predictor of quality day care.

d. Conclusion of Discussion of Quality Space.

If we want young children to feel comfortable in their environment and be receptive to learning, we must strive to make day care centers into "homes away from home." (Nash, 1976, p.58, Aaronson, 1976, p.1) Dr. Anita Olds, a specialist in center design and human behavior, has remarked that if teachers thought of centers as their homes, the use of space might improve dramatically.

We know of one center in a large renovated house. The physical structure gives a "home like" atmosphere, and parents seem to feel very much "at home" there. They come early and join the children in the playground. Parents participate eagerly in the program, and contribute time to fixing up the rooms.

In our homes we arrange spaces of different sizes for different uses. The color, lighting, textures change from one area to another. We arrange our homes to give us places for privacy, for small groups, for larger, more social gatherings. Then we can change our physical location to match our activity and our mood.

Day care homes where the children are truly involved in the life of the home (rather than confined to one room) may well find it easier than centers to meet requirements of variety, privacy and softness. Much can be done, however, in a day care center to achieve a home like atmosphere.

Unfortunately, information on the effects of different space usage is not generally part of teacher training or information given to home care mothers. Helping day care providers to meet the compliance requirements suggested in this section can be handled through federal requirements for training and technical assistance. We return to this problem later in Chapter III on implementing the FIDCR.

6. DESIGN OF THE OUTDOOR SPACE

Reference: FIDCR p.9

II. Environmental Standards

C. Suitability of Facilities

Recommendation: In a program where a majority of the time is spent out of doors, the compliance requirements relating to variety of settings and activities, protected areas, private areas and soft areas, cited in the previous section for indoor space should be applicable to the outdoor facility. In programs where the outdoor area is used only for shorter periods of the day and primarily for physical exercise to supplement well organized and well supplied indoor space, the compliance standards should be recommended goals for the outdoor area.

Discussion: The requirement that there be adequate outdoor space and equipment and that it be used every day (weather permitted) is critical to the mental as well as physical health of children in all day programs. The change of environment from indoors to outdoors is part of the necessary variety in the child's physical space. But play yards are often neglected resources in day care settings. As Taylor and Vlaistos have noted, "Playgrounds have a great deal of potential as learning tools, but they are the least utilized area for this purpose." (p.18) All of the learning that takes place indoors could take place outdoors. "The playground should not be thought of as an exercise yard . . . but as an extension of the classroom. It should be organized in very much the same manner." (ibid, p.73)

Much of the research cited in this paper was done with outdoor space. Kritchevsky and Prescott's study found that high quality outdoor space was associated with positive teacher and child behaviors and vice versa (low quality space with negative behaviors). (Kritchevsky, 1972, pp. 38-41) Five of the eleven components of the "softness" rating in the Pacific Oaks study where "softness" was a major indicator of quality are typically found outdoors. (Prescott, 1975, p.19) Moore's finding that enclosures are important to children was part of a playground study. (Moore, 1966, p.107)

As early as 1935, Johnson found that the amount of playground equipment available to nursery school children had a definite effect on the types of interactions that occurred. She compared the activities of the same children in the same area of space before and after the amount of equipment was changed. Her results showed that reduction of play materials correlated with a 53.3 % rise in "undesirable behavior" (teasing, crying, quarreling, and hitting). Such negative actions accounted for 23.3% of all behaviors on the original playground and 76.6% of all behaviors after some of the equipment was removed. Similar results occurred in the opposite condition in a second and third setting. That is, undesirable behaviors decreased significantly with the introduction of more materials. (Johnson, 1935)

Outdoor space is conducive to many different activities. In planning a remodeling of the outdoor area at the National Child Research Center in Washington, D.C., architect Richard J. Passantino and the

school staff listed fifteen basic outdoor activities:

1. Sand play
2. Water play
3. Ecological studies
4. Nature studies
5. Animal shelters
6. Areas for the teaching of basic sciences
7. Art work
8. Gross motor activities
9. Fine motor activities
10. Areas for small group instruction
11. Free and leisure time activities
12. Table-work areas
13. Greenhouse, gardening
14. Resting areas
15. Transitional play between indoors and outdoors

(ACEI, 1973, p.3.)

New concepts in playstructures replacing the traditional swings and slides encourage much more than just physical development. Gail Ellison of Pacific Oaks suggests that one outdoor structure can and should offer the child:

- choice
- variation in levels and shapes
- a place for group interaction
- opportunity for fantasy play
- physical exercise
- flexibility
- an element of risk and challenge
- durability
- variation in surface and texture

(Ellison, p.1)

That these new play areas do make a difference in children's behaviors is attested to in School Zone: "Principles and teachers who watch children on revitalized playgrounds tell us that discipline problems and vandalism decrease, and cooperation increases." (Taylor and Vlaistos, 73)

There is a growing literature with new ideas for outdoor learning spaces and for play structures which are made out of free, found and recycled materials. We cite some basic references for the reader who wishes more information:

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7. EQUIPMENT AND MATERIALS

Reference: FIDCR p. 10

III. Educational Services

Interagency Requirement # 4, "Each facility must have toys. . ."

Recommendation: That the wording of this interagency requirement be changed to the following:

"Each facility must have toys, games, equipment and material, books, etc. for educational development and creative expression appropriate to the particular type of program, developmental level and culture of the children."

(underlined words are suggested changes)

Recommendation: That compliance requirements be specified for meeting standards on materials and equipment. One possible list of such requirements, based on #2, p.18 and #5 p.19 of the Guides for Day Care Licensing, is the following:

The amount and variety of materials and equipment available, must be appropriate to the developmental needs of the children in care; arranged in such a way as to facilitate learning, assure a balanced program of spontaneous and structured activities, and encourage self-reliance in the children.

Materials and equipment are:

- a. consistent with the specific educational objectives to the program;
- b. consistent with the cultural and ethnic background of the child;
- c. geared to the age, ability and developmental needs of the children;

- d. sufficient in quantity to avoid excessive competition and long waits;
- e. provide for a variety of experiences which appeal to the individual interests of the children in care, and encourage exploration and experimentation;
- f. safe, durable and kept in good condition
- g. stored in a safe and orderly way, and accessible to the children, are arranged so that children may select, remove, and replace them either independently or with assistance.

Discussion: Part of our concern with the physical space of a day care setting is the furniture and materials that occupy the space.

In part, of course, the materials and their display will depend on the goals and program of the child care facility. Pre-set curricula such as those of Montessori or Engelmann-Bereiter have specific criteria for the physical environment in which they are to take place.

We must remember, however, that academic models such as these do not fill the entirety of the day care time. Unlike half-day nursery school programs, children in child care spend only a portion of their time with these program-specific materials. We still have

to consider what activities and equipment are available to the children during the rest of the day.

Further, we must consider that whether or not day care providers think they are offering educational services, the activities and materials available (or the lack of them) profoundly impact on the children's development. Full day custodial care where there are few or no toys or activities cannot be considered quality care.

We are not recommending regulations specifying the exact amount of each type of equipment a day care setting should have; although we do feel strongly that lists of suggested equipment should be available to day care personnel and home care mothers. (For example, we would recommend the new ACEI publication "Selecting Educational Equipment and Materials for School or Home" or the Maryland State list of "Basic Play Equipment"). Rather, we are suggesting that compliance requirements reflect the general principles that are associated with day care in which children learn and show positive behaviors.

Again we find that two important indicators of quality care are variety/choice and organization/display. A third important factor is having culturally relevant materials and being aware of cultural differences in preferred learning styles.

a. Variety/Choice

The choice of materials has been associated with cognitive growth, verbal skills and other important aspects of children's learning. For example, some of the correlations found in the 1966-69 study on The Effects of the Headstart Experience on Some Aspects of Child Development were:

Large Muscle Equipment

Children in classrooms with access to large muscle equipment (i.e., jungle gyms) gained more in cognitive ability and school readiness than children who had no access to such equipment.

However - - if used excessively, children are diverted from other activities and therefore show smaller cognitive gains and fewer social interactions.

Small Muscle Equipment

Children in classrooms where cognitive materials were available and extensively used, showed greater improvement in task orientation in tests.

Dramatic Materials

Where available and used extensively with verbal interaction, children showed comparatively greater increases in social interactions and parents were more favorable towards Headstart.

(Datta, p. 51)

The choice of materials can be used to foster social development. In a study by Quilitch and Risley, it was found that "the type of toys given to children within a free play setting had a pronounced

and dramatic effect upon their social play and the amount of time spent playing cooperatively with each other." (p. 577)

Within the experiment, social play occurred only 16% of the time spent with certain toys (those grouped as "isolating") but 78% of the time spent with other toys. Different behaviors were elicited by different materials.

The choice of materials can be used to foster self-confidence. In the preschool years, the child's self-concept is evolving. Children learn from their experiences if their world values them or considers them unworthy. The environment can help children develop a feeling of "I can do it!" If materials are too difficult, children decide that they are not capable of succeeding and they learn to give up. If the materials chosen are too simple, children become bored and restless and disruptive.

The choice of materials can be used to foster intellectual development. William Hall of Elementary Science Studies writes, "We have found that children can easily become intrigued with sorting, classifying, forming and dealing with relationships of classes when they have appropriate materials to work with." (Loeffler, p.20)

Having a variety of materials in sufficient quantity is therefore a critical factor in child care that fosters intellectual, social and physical development.

b. Organization/Display

The arrangement of the materials in the room is in itself a good vehicle for teaching skills such as classification. Materials can be grouped by categories in different parts of the room and in sub-groups within each area.

In addition, how the materials are displayed communicates messages to children about the social behavior expected of them. Thelma Harms writes, "Materials that are in good condition and placed far apart on open shelves tell a child that the materials are valued, that they are meant to be considered, and that a child may take them off the shelf by himself...What kind of message does a child get from open shelves crowded with an odd assortment of materials, few with all the pieces put together?" (Harms, p.59) As Anita Olds has said, "When we find chaos, we tend to create even more chaos." - an observation often borne out by the reality of child care settings.

Materials can be displayed to help children make conscious choices about what they want. "A sense of order in the physical environment enables the child to make thoughtful rather than impulsive choices in selecting activities. The materials can be stored and displayed so that their inherent structures are evident to the child from his own observations. An example of this order would be the storing of blocks so that their dimensions and relationships are evident to the child." (Loeffler, p.21)

The display of materials can foster the goal of "encouraging the development of physical and social skills." Montes & Risley compared the classrooms in which materials were neatly arranged and clearly displayed on shelves with classrooms where all the play materials were scrambled in toy boxes. One of their findings shows that when manipulative toys were displayed on shelves, the children spent more time playing with them whereas children whose toys were in boxes spent a great amount of time searching for what they wanted.

As with organization of the child care space, arrangement of the materials can benefit the adults as well as the children. For example, few problems annoy parents or day care teachers more than the misuse of materials and the refusal of children to clean up. Yet the adults themselves put out toys which are broken, have pieces missing and are jumbled on shelves or in boxes in no special order. Teachers and home care mothers who value materials and see clean-up as a learning experience for which children can take responsibility, structure the layout of materials so there is no question about where they go. One way to do this is to have pictures to label each item taped to shelves to show that everything has a place. Children learn very quickly that there is a place for everything in the room and begin to take responsibility for seeing that all items are returned. Social development, cognitive development and physical development are all fostered by well thought out organization of the materials.

c. Cultural Relevancy

While some children in America may have many fewer toys at home than other children, there is no culture in which children will not naturally interact with objects as toys. There are community variations in the values placed on different modes of interaction, but for all young children the medium of learning is the same - playing with materials. Educational equipment is therefore a necessary part of any child care program - home based or center based and should be required.

Children do respond to the implicit message of materials. Those which reflect the children's culture in a positive way foster development of a sense of worth. If there are no culturally relevant materials the children may be unable to identify with what they find. For example, the "community workers" figures that are a common block accessory are meant to allow the child to play out possible adult roles. If the figures are all white males, what messages are Black, Indian, Spanish and female children getting? COMMUNITY MADE OR LOCALLY FOUND MATERIALS SHOULD BE CONSIDERED AS ACCEPTABLE IN TERMS OF MEETING REQUIREMENTS AS ARE TRADITIONAL COMMERCIALY SOLD MATERIALS IF THEY PROVIDE THE CHILDREN WITH THE SAME EDUCATIONAL OPPORTUNITIES.

iii. Recommendations for improving implementation of the FIDCR

It is pointless to discuss the promulgation of regulations without considering the process of implementation. Discussions we have had with day care providers support the conclusions reached by the two licensing studies cited earlier; that is: THE MONITORING PROCESS NEEDS IMPROVEMENT. The FIDCR could impact on these needs by making requirements on the state and local agencies responsible for monitoring day care settings.

Because we proceed on the assumptions that

- regulations should provide minimum standards necessary for the health, safety and developmental needs of children but that

- it is important to allow for regional and community variations in structure, space arrangement and program, we feel that improvements in the organization and use of the day care physical environment will best be achieved by requiring state and local agencies to help day care providers to meet regulations by providing

- information
- coordination
- technical assistance
- training.

Our recommendations address two related problems that day care providers have, namely:

- meeting regulations on space; dealing with licensing officials;
- finding (constructing or renovating) space; arranging the space and materials to provide a program that best meets the community's goals and the children's needs.

A. Helping caregivers meet regulations:

THE INTENT OF THE REGULATIONS AND THE LICENSING FUNCTION SHOULD NOT BE TO CLOSE DOWN PROGRAMS, BUT TO AID CHILD CARE GIVERS TO SATISFY THE REQUIREMENTS. Therefore, we recommend that:

1. The administrative agency in charge of licensing be required to make available to all prospective child care providers an information packet outlining step-by-step what must be done to be licensed.

Prospective day care operators often do not have information about all the requirements they must meet or licenses they must secure. Day care directors sometimes do not understand the jargon of building codes and do not have enough knowledge to ask the official to work with them to find solutions to space problems.

The information packet should be clearly worded without bureaucratic jargon so that the layperson can understand it. It should be available in whatever languages are spoken in the area. Such a packet would include: the regulations and compliance requirements including alternatives where they exist, an explanation of why regulations are important, some figures on how many people go through a process like this, all necessary forms, names, addresses and phone numbers of agencies that have to be dealt with, and a list of possible sources for technical assistance in meeting regulations.

2. The FIDCR should require that the licensing function be placed in an agency that is directly concerned with early childhood education. At the present time, in 84% of the states, regulations are enforced by the welfare agency. (Day Care Licensing Study, p. 5.) In other fields, professionals are regulated by their peers in the profession: doctors regulate doctors, hairdressers regulate hairdressers. Child care licensing monitors should be people with experience and knowledge in the field of early childhood education.

3. The FIDCR should require that early childhood specialists who become licensing monitors be trained in applicable federal, state and local requirements so that they can aid a prospective child care provider through the maze of necessary licensing procedures.

The Day Care Licensing Study (p. 5) found that "approximately 15 to 20 major work tasks are required in the licensing process, assuming that all regulations are met on the initial attempt." (underlining ours). While such problems are not limited to day care (opening a hospital in Florida requires 16 licenses), a major institution such as a hospital can afford to hire someone to be exclusively responsible for licensing procedures. Day care directors and home care mothers have many other concerns as well.

4. The licensing monitor should be required to give technical assistance to the child care provider in how to make the space meet the requirements if such assistance is requested.

Dr. Irwin Benjamin believes that it is often possible to adapt program needs to the regulations without sacrificing the program, but expert advice might be needed to solve the problem. To cite one example: tri-wall cardboard is a sturdy and inexpensive furniture material. Fire marshalls have sometimes told centers that tri-wall is not acceptable because it is a paper product; but tri-wall can be soaked in a flame retarding solution and meet fire code regulations. Perhaps neither the fire inspector or the day care director know that, but an experienced early childhood space specialist could have suggested the solution. Licensing as consultant services was written into the Washington State law in 1967. (Paulson, 1968, p. 4)

5. The FIDCR should require that there be coordination of regulations and licensing codes at the state and local levels. A major difficulty for child care givers is conflicting requirements. The safety inspector may require a gate at the top of a stairway for the protection of toddlers and the fire marshall may insist that the gate not be there for ease of evacuating the children.

The day care director or home care mother is caught between the demands of different agencies. It should be the responsibility of the licensing agencies to resolve these conflicts rather than having the caregiver be in the position of putting up gates when the safety inspector comes and taking down gates when the fire marshall visits. One suggestion is to create state or local coordinating boards to write uniform codes which meet the standards all the experts feel are critical.

Further suggestions for implementation of the FIDCR:

6. Performance standards should be flexible with alternatives wherever possible. For example, in the inner city, roof tops (appropriately fenced and equipped) should be acceptable as possible outdoor spaces. For home care settings where there is no outdoor play yard, a caregiver should be considered in compliance if (s)he demonstrates that (s)he knows about and uses nearby public park facilities. A statement could be

put into the INTRODUCTION of the FIDCR on page 2 or 3 that the intent of the regulations must be considered when evaluating compliance and that alternatives that achieve the standard should be considered acceptable.

7. Levels of acceptable compliance could be built into regulations. One suggestion is to establish two levels for space, health, and safety requirements. One level would be the provisions that are absolutely necessary for the protection of children. These would have to be met before licensing. A second level would be recommendations, goals for quality care. A center or home would have to meet a given percentage of these (3 out of 5 or 6 out of 10) with a time limit to come into compliance on the others. For example, our recommendations for suitable design and organization of the outdoor space would be second level goals.

8. Planning grants and assurance of continuation of support should be available to day care providers. While we realize that this suggestion goes beyond the scope of what the FIDCR committee can do, we feel it is important to discuss this recommendation because of the importance of long range planning for physical space issues.

At the present time the federal government provides support only on a yearly basis with no assurance of continued support in future years. In fact, the government insists that the child

care provider realize that continued support is not assured. It is therefore not feasible for the child care giver to plan in long range terms. Capital costs such as structural changes, furniture and materials, however, are initial investments that must be amortized over long periods. Thought of as one year costs they become prohibitive.

As an incentive to provide quality space and program, there should be the possibility of three or five year projects where a caregiver could have the assurance that if the facility met the regulations and was functioning well, support would be continued. Such an incentive would encourage long range planning and relieve anxiety over the amortization of high starting up costs (those relating to space and materials).

A related recommendation is the availability of planning grants (a small amount of money for a limited time) to provide the prospective caregiver with time to learn about regulations, to find suitable space, and to plan the program and the consequent use of space. The grant should require that planning involve the community; that the grantee find out about the clientele population - their culture, language, and attitudes so that qualified staff could be found and regulations on cultural sensitivity could be met. At the end of the grant period, the caregiver would have to have a plan for the facility and the program.

B. Helping caregivers find and arrange space:

1. In section IIB, p. 8, of the FIDCR, the requirement states that the administrative agency must work with the appropriate authorities to secure technical advice. We recommend that the FIDCR also mandate the licensing authorities to maintain lists of experts capable of giving technical advice to applicants when it is requested, and that among the available advisors there be design specialists.

Space for child care facilities are too often planned by persons without the combined expertise in architecture and early childhood. One example of how important and effective this aid can be is the case of a housing development built by the Virginia State Housing Authority. When a firm of educational architects (Richard J. Passantino, A.I.A., Architects) was consulted, they were able to make suggestions about the proposed child care facility that had a tremendous impact on the usefulness of the space allotted. The construction costs of the new plans were no higher than those of the original. Because the expertise of the educational architects was requested at the planning stage, the builder saved the costs that might have arisen had the space been found to be non-functional after it had been constructed.

Technical assistance from educational architects and design experts should be available from the initial planning stages of either new construction or renovation. The savings in construction costs can more than offset the architect's fees. To further reduce costs, one suggestion is to utilize university design departments where graduate students could provide free assistance as part of their degree programs. DESIGN EXPERTISE SHOULD BE PART OF THE TECHNICAL ASSISTANCE AVAILABLE THROUGH LISTS MAINTAINED BY THE LICENSING AGENCY.

2. In section VI, p. 13, of the FIDCR, there is a requirement for "continuous inservice training" of day care staff, but the organization and use of space is not now one of the areas included in the list of specific topics. On the basis of the evidence presented throughout this paper, we recommend that THE USE OF PHYSICAL SPACE BE INCLUDED IN THE LIST OF SPECIFIC PROGRAM AREAS INCLUDED IN CHILD CARE TRAINING.

Compliance requirements for FIDCR # VI, p. 13, on training should indicate that "orientation, training and supervision" can take the form of

- materials and written information
- on-site assistance and advice
- arranging for workshops and courses
- group meetings for home care mothers.

The availability of materials and assistance should be well publicized. Materials and information should be presented in a simple, straight-forward manner and in the language of the trainee. On the issue of space, training should help the child care worker to understand how the design and organization of the physical environment is critical to the protection and development of children, what the quality factors in space usage are, ~~information on inexpensive additions to space and~~ materials.

On-site assistance in arranging the physical environment and making improvements in space usage should be available from the operating or administering agency (or their consultants). There are at present few courses in "arranging the physical environment" in early childhood curricula. Because so few teachers learn about space in early childhood degree programs, inservice training is particularly important in this area.

Training is probably the most effective method of improving the quality of child care space as well as the quality of interactional behavior in child care settings.

Training and certification of home care mothers should be initiated in a competency based program similar to the idea behind the Child Development Associate certificate. Safety, health and space issues should be given first priority. (For example, in a recently observed instance in a seventh floor apartment day care home, a visitor saw open unscreened windows with no protective gates across them. The home care mother was not treating the children maliciously -- she had obviously just not thought about the danger involved. She needed training in safety techniques and specific information on how to protect the children and also have fresh air in the home.)

We should consider such training as important regardless of how long the center staff person or home care mother continues to be employed in this capacity. The knowledge and skills caregivers get during this time will continue to be useful in their roles as parents and neighbors. In Denmark, the high attrition rate among infant care workers is considered "a fringe benefit for the welfare of the country since the training and experience of these (people) will make them better (parents)." (Wagner and Wagner, 1971, p. 33)

Regulations even when they include compliance requirements and performance standards cannot cover every specific aspect of every possible circumstance. Therefore, training so that the child care worker is able to make decisions that will result in quality use of space is the best way to insure that the intent of the general regulations will be met. FIDCR requirements for training should be continued and emphasized.

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APPENDIX A

REPORT STAFF:

Charito Kruvant, M.A., Early Childhood Education, Bilingual Education; project director, Celebration in Learning '76; relationship of culture to space and materials.

Mrs. Kruvant is particularly concerned with the lack of sensitivity of current regulations to the needs of different cultural communities throughout the country. She has had experience with regulations in setting up day care centers for the Spanish community in different areas of the country. She has traveled extensively in the United States and has observed day care in many different communities.

Ginny Redish, Ph.D., Linguistics, staff writer, Celebration in Learning '76; familiarity with Head Start Planned Variation and other research studies.

Dr. Redish is a specialist in child language development and bilingual education. She has observed the problems and the realities of providing care for young children in many communities throughout the country, particularly among native American groups. She has completed studies for the Bureau of Indian Affairs and for the Office of Economic Opportunities on the needs of non-English speaking children in the United States.

Diane Trister Dodge, M.S., Early Childhood Education, program coordinator, Celebration in Learning '76; effects of room arrangement and the display of materials on children's behavior.

Ms. Dodge has ten years of experience training Head Start and day care teachers in rural and inner-city urban environments. She has worked extensively in day care classrooms helping teachers use their physical environment as a teaching strategy and has published a slide presentation for teachers on how room arrangement affects children's behavior.

Richard J. Passantino, A.I.A. and N. Jane Hurt, Registered Architect, educational architecture specialists, Richard J. Passantino, A.I.A., Architects; structure and design.

In addition to designing the Celebration in Learning classroom, Mr. Passantino and Ms. Hurt are involved in several projects both for creating new space and for the renovation and redesign of existing structures to be used as day care centers. In addition to their familiarity with regulations on structure and physical facilities, their experiences in designing indoor and outdoor space has made them aware of the specific needs of special groups, such as handicapped children. Mr. Passantino has also studied day care construction and regulations in several European countries and researched and prepared the E.F.L. publication, Found Spaces and Equipment for Children's Centers.

Robert Sheehan, Ph.D. candidate, Georgia State University, consultant to Celebration in Learning '76; effects of the design of interior space and separation of areas on children's behavior.

Mr. Sheehan has conducted and published research on the behavior of children in different interior settings in day care environments. His research and classroom experience have led him to develop many innovative suggestions on the division of interior space and the use of lighting, flooring, wall coverings, and furniture to create environments which are conducive to growth and learning.

APPENDIX B

1. Participants attending the conference at Celebration in Learning '76, August 18, 1976.

In addition to the six members of the report team:

Monroe Cohen
Director of Publications
Association for Childhood Education International
Washington, D.C.

Faye Coleman
Director, Home Care project
Children First, Inc.
Washington, D.C.

Lucy Conroy
Office of the Secretary for HEW
Planning and Evaluation

Debbie Frisby
Bibliographer
Celebration in Learning '76

Ramon Garcia
Research and Evaluation Department
Office of Child Development

Jane Gold
Office of the Secretary for HEW
Planning and Evaluation

Cheryl Jones
Research Associate
Celebration in Learning '76

Julie Phillips
Center for Studies of Child and Family
National Institute of Mental Health
Bethesda, Maryland

Jessie Roderick
Department of Education
University of Maryland
College Park, Maryland

Margaret Skutch
Director, Early Learning Center
Stamford, Connecticut

Loise Sullivan
Director, Rosemount Center
Washington, D.C.

Tawara Taylor
Teacher/Administrator
Celebration in Learning '76

2. Other persons consulted personally, by phone or by mail, who provided literature sources or other suggestions as part of this project.

Nathaniel Archuleta
College of Education
University of New Mexico
Albuquerque, New Mexico

Edward Avila
Bilingual Children's Television
Oakland, California

Irwin A. Benjamin
National Bureau of Standards
Gaithersburg, Maryland

David Connell
Deputy Project Director, National Day Care Study
ABT Associates
Cambridge, Massachusetts

William Cruikshank
Department of Special Education
University of Michigan
Ann Arbor, Michigan

Lorraine G. Desbordes
Director, National Injury Information Clearinghouse
U.S. Consumer Product Safety Commission
Washington, D.C.

Carolyn Farro
UNCO
Washington, D. C.

Richard Fiene
Governor's Office for Human Resources
Harrisburg, Pennsylvania

Ulga G. Harper
Office of Bilingual Education
Department of Health, Education and Welfare

Neith Headley
Association for Childhood Education International
Washington, D.C.

Sidney Johnson
Director, Family Impact Seminar
George Washington University
Washington, D.C.

Liz Kaplan
Director, Washington Preschools, Inc.
Washington, D.C.

E. Robert Lacrosse
Director, Early Childhood Project
Education Commission of the States
Denver, Colorado

Arthur L. Mathis
Meharry Medical College
Nashville, Tennessee

Marjorie Martus
Ford Foundation
New York City

Anita Olds
Other Ways
Cambridge, Massachusetts

Elizabeth Prescott
Pacific Oaks College
Pasadena, California

Harold Proshansky
Department of Psychology
City University of New York

David Rice
Children's Defense Fund
Jackson, Mississippi

APPENDIX C

CELEBRATION IN LEARNING ' 76 STAFF:

CHARITO KRUVANT - PROJECT DIRECTOR

SAI CHIANG - Program Assistant

DEBBIE FRISBY - Bibliographer/Data Collector

LEONOR GUILLEN - Bilingual Editor

CHERYL JONES - Research Associate

GINNY REDISH - Research Associate

JESSIE RODERICK - Research Consultant

TAWARA TAYLOR - Teacher/Administrator

DIANE TRISTER - Program Coordinator

MIMI TSE - Research Associate

NOTE TO THE READER:

The interpretations and conclusions expressed in this paper are the author's and are not intended to represent the position or policy of the Department of Health, Education and Welfare.

It is being distributed to solicit comments and criticisms to assure technical soundness, the adequacy of supporting materials, relevance, and general comprehensibility. It is hoped that this paper and its review will contribute to the improvement of the public debate on social policy and the proper Federal role in regulating child day care.

Comments may be addressed to:

William R. Prosser
Department of Health, Education and Welfare
OS/ASPE/SSHD - 416E South Portal Building
200 Independence Avenue, S. W.
Washington, D. C. 20201